

CLAIMS

- Sub A² 1. A high temperature superconducting cable, comprising a tubular support, a plurality of superconducting tapes including a superconducting material enclosed in a metal covering and spirally wound onto the support so as to form at least an electroinsulated, thermally-insulated and refrigerated superconducting layer, characterised in that the superconducting tapes have a maximum tensile deformation greater than 3%.
- 10 2. The cable according to claim 1, wherein the superconducting tapes comprise at least a metal strip coupled to the metal covering
- Sub A³ 3. The cable according to claim 2, wherein the superconducting tapes comprise two metal strips coupled to the metal covering.
- 15 4. The cable according to claim 2, wherein the metal covering is made of silver or silver-based alloy with magnesium and/or aluminium and/or nickel.
5. The cable according to claim 2, wherein the metal strip is coupled to the metal covering by welding.
- 20 6. The cable according to claim 2, wherein the metal strip is coupled to the metal covering by brazing.
7. The cable according to claim 2, wherein the metal strip is coupled to the metal covering by gluing.
- 25 8. The cable according to claim 2, wherein the strip is made of non magnetic stainless steel having a low electric conductivity.
9. The cable according to claim 2, wherein the strip is made of bronze.
- 30 10. The cable according to claim 2, wherein the strip is made of aluminium.

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11. The cable according to claim 1, wherein the tubular support is made of metal.

12. The cable according to claim 11, wherein the metal tubular support is made of non magnetic stainless steel.

5 13. The cable according to claim 11, wherein the metal tubular support is made of copper.

14. The cable according to claim 11, wherein the metal tubular support has a continuous structure, either smooth or corrugated.

10 15. The cable according to claim 11, wherein the metal tubular support has a spirally wound metal strip structure.

16. The cable according to claim 11, wherein the metal tubular support has a tile structure.

15 17. The cable according to claim 11, wherein the winding angle of the superconducting tapes on the metal tubular support is smaller than 40°.

Sub A4 > 18. A process for manufacturing high temperature superconducting cables, comprising the steps of:

- providing a tubular support,
- 20 - enclosing a superconductive material in a metal covering, so as to form superconductive tapes,
- spirally winding a plurality of superconducting tapes onto the support so as to form at least a superconducting layer,
- 25 - electroinsulating the superconductive layer,
- thermally insulating the superconductive layer,
- providing the possibility of refrigerating the superconductive layer below a predetermined working temperature, when cables are in use,
- 30 characterised by
- controlling the maximum tensile deformation of the superconducting tapes to have it greater than 3%.

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19. Process according to claim 18, comprising the step of:
- coupling at least a metal strip to the metal covering
of the superconducting tapes.

Sub A⁵ → 20. Process according to claim 19, comprising the step of:
5 - coupling two metal strips to the metal covering of the
superconducting tapes.

21. Process according to claim 19, wherein the coupling
step is performed by welding.

22. Process according to claim 19, wherein the coupling
10 step is performed by brazing.

23. Process according to claim 19, wherein the coupling
step is performed by glueing.

24. Process according to claim 1, wherein the tubular
support is made of metal and the winding angle of the
15 superconductive tapes on the metal tubular support is
smaller than 40°.

add A⁶ →

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